CHIAYO

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It has been RoHS Compliant

smart 300

C H I A Y O

Portable Sound System

OPERATION MANUAL

CHIAYO ELECTRONICS CO.,LTD

CHIAYO

SMART 300 Operation Manual

Congratulation and thank you for the purchase of this all-in-one ultra compact portable sound system.
To ensure a trouble-free operation, please read this manual thoroughly to fully understand its controls and functions.

There are various versions of the SMART 300 as follow :

1. SMART 300 Passive Speaker. (Fig.1)
2. SMART 300 portable sound system only (VHF / UHF) (Fig.2)
3. SMART 300 with USB Digital player. (VHF / UHF) (Fig.3)

All the versions can be equipped with 1 or 2 Wireless (WR) receiver module(s). The wireless (WR) receiver module can be either VHF or UHF. The VHF module is a fixed crystal single frequency type whereas the UHF module is a PLL synthesized type with 16 preset frequencies (identified by external 16 channel rotary switch(s)).
Remark: It is also possible to have all the above versions without any wireless (WR) fitted.

Configuration :

All versions of SMART 300 series comes equipped with the following :
1.A switch mode power supply.
2.One or two wireless microphones, either handheld or bodypack transmitter.
(except version with no wireless receiver module built-in)
.

Matching Transmitters

Transmitter types	Handheld		Beltpack		Handheld	Beltpack	Handheld	Beltpack
Frequency band	UHF				VHF			
Transmitters	SQ-5016	SQ-816 SQ-916	SM-5016	SM-816 SM-916	SQ-216 SQ-316	SM-216 SM-316	Q-1002	M-1002
Battery used	AAx2	AAx3 9Vx1	AAx2	AAx3 9Vx1	AAx3 9Vx1	AAx3 9Vx1	9Vx1	9Vx1
No. of channel	16						1	

Optional accessories :

1.Carrying bag.
2.Tripod stand.
3.Charger for UHF transmitter.
4.Companion powered speaker.
5.Wired microphone.

Remark: Manufacturer reserves the rights to change the above combinations without prior notice.

Maintenance-free Lead Acid battery

Guidelines for maintenance-free Batteries:

1. Battery should operate at temperatures between 15°C ~ 50°C. To ensure a longer life span, it should be kept between 5°C ~ 35°C. For optimum result, 20°C ~ 25°C will be ideal. When temperature falls 15 degrees below zero, battery will undergo some changes in its chemical contents and therefore cannot be recharged. Operating the battery at higher temperature will result in higher capacity but shorter lifespan, whereas lower temperatures operation has a longer lifespan but less capacity.
2. If the battery is not recharged 72 hrs after it is completely used, it will be permanently damaged.
3. When the battery is being charged, the internal gases will be electrolyzed into water at the negative charge, maintaining the battery's storage abilities with no water added. However, erosion at the charged ends of the battery will cause poor performance.
4. The battery's cycle lifespan (no. of charge and discharge cycle) is determined by the degree at which power is dissipated., especially the degree of discharged each time it is used and the recovery charging method. For normal use, the battery can be used for longer hours when less power is dissipated each time and vice versa. At 25°C, maintenance-free batteries could be charged 150 ~ 200 times at 100% discharge each time.
5. Decrease in capacity, internal short circuit, deformation in appearance, erosion of charged ends and decrease in open circuit voltage are symbols indicating battery is approaching the end of its life cycle.
6. When two batteries are used in parallel connection, the resistance of the cables should be kept equal.

Properties of the Lead Acid Battery:

1. Has no memory effect. Can be charged at anytime, even when the recharge indication light is not on.
2 .Performance and efficiency are affected by changes in the environment, especially temperature and humidity. (Best operated between 20°C ~ 25°C)
3. Battery discharge naturally according to a certain pattern even not in use. For best performance and a prolonged lifespan, it should be recharged every month even when not in use.
4. Under normal circumstances, battery could last for about a year.
5. When the battery's life expires, possible indicators include internal short-circuit, decrease in capacity, deformation in appearance, erosion of charged ends and decrease in operating voltage.

User's Precautions:

1. For first-time use, charge the battery for 10 hrs until it is fully charged.
2. To maintain performance and lifespan, if product has not been used for 3 months after the initial shipment, please fully charge the battery.
3. Before each use, it's advisable to charge the battery to its full capacity.
4. The average lifespan of the battery is one year. The user is advised to change the battery after one year of use.
5. The current consumption is in direct ratio with load current. The more current consumption, the less the operation time.
6. SMART and FOCUS operate on one 12V/2.7AH battery. ADVENTURE, CHALLENGER, and VICTORY operate on two 12V/4.5AH batteries.

Caution and tips on how to obtain the best results.

1. Before inserting the batteries, please make sure that they are inserted according to the correct polarity.
2. The audio cable of VHF transmitters also serves as antenna. The length of the cable is cut according to the specific frequency range. Do not alter the length or mix around the cable of different transmitters. The use of wrong audio cable will affect the antenna efficiency of the transmitter!
3. Use only brand new Alkaline batteries. Do not use " general purpose " batteries, When batteries are weak, replace all the batteries at the same time. Do not mix and use new and old batteries together.
4. Position the receiver such that it has the least possible obstructions between it and the transmitter. Line of sight is best !
5. The transmitter and the receiver should be as close as possible but not less than 1m.
6. A receiver cannot receive signals from two or more transmitters simultaneously.
7. Turn the transmitter off when it is not in use. Remove the batteries if it is not to be used for a period of time.
8. Antennas form an integral part of the receiver and must be installed when in Operation.

Simple DIY Trouble-shooting :

No sound when one speaks into the wireless microphone

Please verify the followings:

1. Main power switch of the system should be ON. When power on LED not lighting up, it means that the battery is either weak or not charged. Please plug in the AC cable to Charge the battery. The rechargeable battery has a life span of about 2 years. If the batteries have reached their life expectancy, please change to a fresh pair.
2. The power switch of the corresponding receiver module should be put to ON. This is indicated by the lighted power LED. When two wireless microphones are used, both power switches of the receiver modules must be ON.
3. Wireless microphone should be switched to ON and verify that the battery is okay. (please refer to wireless microphone operating manual).
4. Please verify that the frequency on the wireless microphone and the corresponding built-in wireless receiver module are exactly of the same frequency group and channel.
5. Master volume control of the system should be turned on.

SMART 300 Passive Speaker

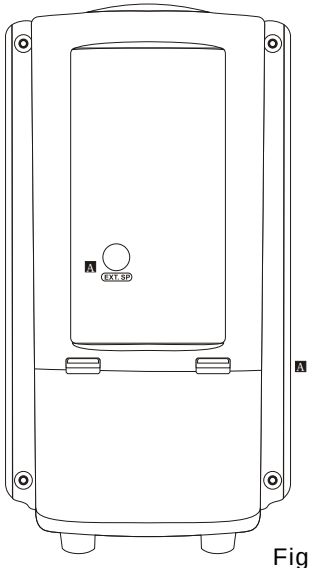


Fig. 1

SMART 300 (Amplifier version)

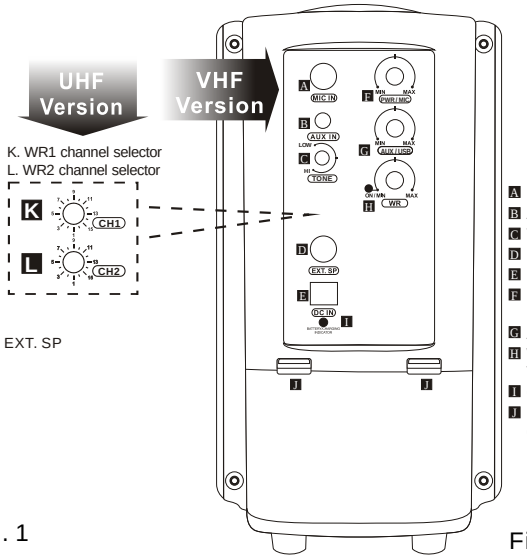


Fig. 2

SMART 300 (USB Digital Player version)

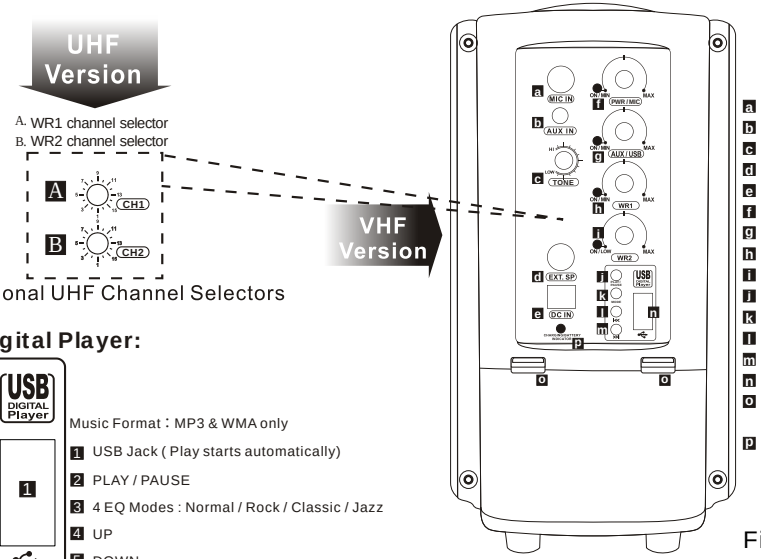
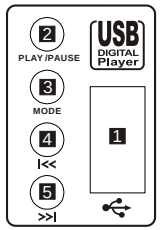


Fig. 3

USB Digital Player:



Music Format : MP3 & WMA only

1. USB Jack (Play starts automatically)
2. PLAY / PAUSE
3. 4 EQ Modes : Normal / Rock / Classic / Jazz
4. UP
5. DOWN

Operating procedures

After unpacking the unit for the first time, please charge the unit for about 4~5 hours before any operation. This is absolutely necessary as the built-in rechargeable battery might have been discharged naturally due to long shipment and storage time, even though it has been fully charged in the factory prior to shipment.

To charge the battery, just plug in the DC end of the switch mode power supply into the DC IN of the unit and charging will start automatically. During the charging process, the charging indicator LED will flash RED. When GREEN LED stays glow permanently, battery is then fully charged and normal operation could now be started.

To operate this portable sound unit, switch on the main POWER switch (H), which will glow GREEN. However, the main POWER switch does NOT switch on the WR modules as each of them has dedicated Power / Volume control switch indicated by WR1, WR2. To operate each of them, you must switch them on accordingly.

When the Charging / Battery Status Indicator glows RED, it means the built-in rechargeable battery is weak and a recharge is necessary. While charging, the unit could also be operated simultaneously.

Operating the built-in Wireless (WR) receiver modules

In the SMART 300 control panel, there are two designated power switch / volume control knob for the built-in Wireless Receiver (WR). They are indicated by WR1 and WR2 .

To use the 1st wireless microphone, first switch on the main power switch (H), then switch on the WR1 power / volume control switch, Red LED next to it will glow. Switch on the corresponding transmitter (RF). Rotate the volume control knob clockwise and amplified sound could be heard if voice is spoken into the transmitter.

To use the 2nd wireless microphone, switch on WR2 power / volume control switch and repeat the same operation as above.

By default, when the system is equipped with one WR receiver module only, it is always controlled via WR1 switch, WR2 is then redundant.

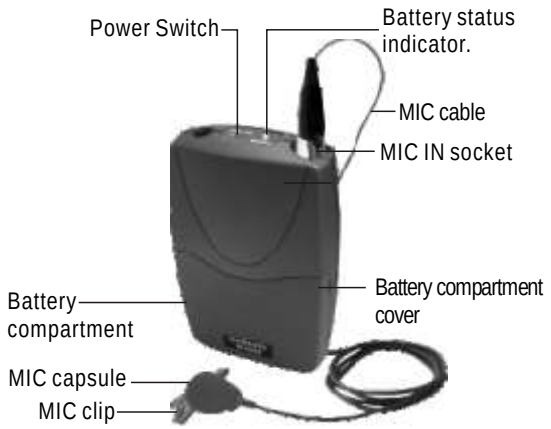
For SMART 300 which comes with wireless receiver (WR) module, there are two possibilities, namely the VHF or UHF version. The VHF receiver module is a fixed frequency type. To operate the VHF version, just switch on the corresponding wireless microphone(s) after switching on the WR1 or WR2 switch.

To operate the UHF version, which comes with 16 preset frequencies, please ensure that the channel setting on the wireless microphone and SMART 300 receiver module(D or E) are the same before operation. Then perform the same procedure as above.

> The above operation is only valid with SMART 300 version with built-in wireless receiver (WR) module(s). Otherwise, the WR controls are redundant.

VHF Beltpack Transmitter **M-1002**

Parts & Functions

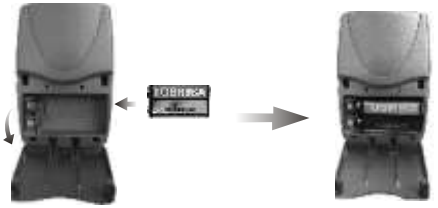


Input level Gain control adjustment

Low-impedance "MT" gain control is situated inside the beltpack transmitter. Gain control port is an adjustable design that enables user to use microphones of different output levels. To adjust the audio input levels, simply use a small screw driver to switch the "MT" control till a desired level is chosen.

Battery Installation

M-1002 uses 1 piece of 9V battery. To install new or replace the old battery, first open the battery compartment cover, then insert the new battery according to its correct polarity as indicated. For longer operation hour, Alkaline battery is recommended!



Belt Clip

This uniquely designed belt clip allows 360° rotation. Select the best position to achieve optimum wearing comfort.

Beltpack Transmitter **SM-816(UHF) / SM-216(VHF)**

Battery installation

This transmitter uses 3 pieces of " AA " size batteries (Alkaline battery is recommended). To install or remove the batteries, press the release buttons at the edges of the transmitter to open or close the cover as illustrated (Fig.1).

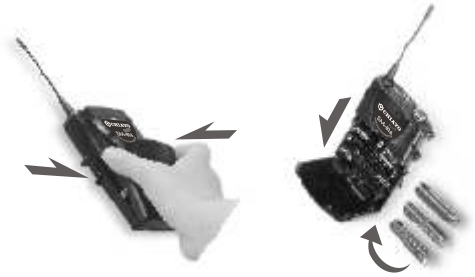


Fig.1

Beltclip installation

This specially designed detachable beltclip allows the user to wear the transmitter with antenna pointing upward or downward as illustrated. To wear the transmitter with the transmitter pointing upward, install the belt-clip as in Fig.2. To wear the transmitter with the antenna pointing downward, please install the belt-clip as in Fig.3.

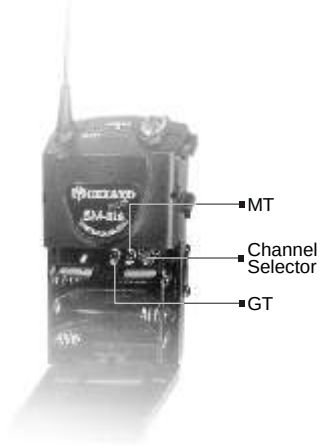
Fig.2

Fig.3

Channel selection and gain adjust

Channel selector and gain adjust are hidden in the designated cover of the front as illustrated.
To make channel selection and gain adjust, please press the designated cover and flip it open as illustrated. Channel selection can be made by rotating the selector with a small screw driver.

Gain adjust for Lavalier and Headset microphones can be done by adjusting the MT switch, whereas GT switch is for the gain adjust of electric Guitar and other high-impedance line level inputs.



Operating the dynamic wired microphone

There is a MIC IN jack with dedicated volume control for this portable sound unit. To use a cable microphone (dynamic only), just plug the end with a phone jack plug into MIC IN . Switch on the Power / volume control knob MIC (H) and rotate it clockwise, amplified sound could be heard when voice is spoken into the cable microphone.

Operating the USB Digital Player

To use the USB 2.0 Player for playing music files(***.mp3** & ***.wma** format only), simply plug your USB 2.0 into the port after the player has been turned on. " PLAY / PAUSE", " MODE ", " Forward " and " Rewind " buttons can be used to control during USB is in use. User is advised to have the USB format in " FAT " or " FAT 32 ". The built-in USB player can not be able to read the MP3 files stored in your USB if it is not formatted by either " FAT " or " FAT-32 ". Secondly, USB in use can only be detached after the player has been shut off, preventing the USB from being possibly damaged.

Battery Charging

Internally, the SMART 300 SMART Slave contain 1 piece of 12V / 2.7AH maintenance-free lead acid rechargeable battery, which has no memory effect. When the battery is weak, the power indicator RED LED will light up if the main power is switched on.

To charge the battery, simply plug in the AC power supply, the charging process will start automatically. While charging, the charging indicator will be in FLASH RED. When battery is fully charged, the charging indicator will stay GREEN.

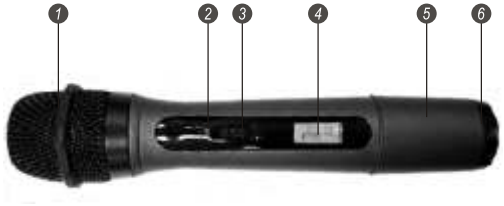
FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.
This equipment should be installed and operated with minimum distance 20 cm between the radiator & your body.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions (1)This device may not cause harmful interference, and (2)this device must accept any interference received, including interference that may cause undesired operation.

UHF Handheld Transmitter **SQ-5016**

Parts and functions



1. Microphone capsule module
2. Battery status LED
3. ON/OFF switch
4. LCD
5. Battery compartment
6. Rotating protective cap for controls (also serves as color identification cap)
7. Lock / Unlock
8. Set
9. Up
10. Down
11. Charging port
12. Name plate

Changing of capsule

First unscrew the metal grill from the housing and take out the capsule to be replaced. Then insert a new capsule. Either dynamic or condenser type can be chosen from location to location.

Battery installation

SQ-5016 microphone requires 2 pieces of " AA " size batteries to operate. Please insert the batteries according to the correct polarity as indicated.

Caution

Many batteries are known to have leakage problem of conductive and corrosive liquid. Please observe the rule to remove the batteries if they are not to be used for a longer period.
Due to various unstandardized sizes (diameters) of " AA " batteries, this battery compartment is designed to accommodate the most common Alkaline batteries only.

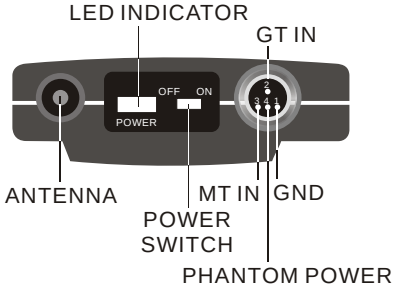
Installation of cable restraint

To prevent contact noise caused by constant tension applied to the connector,,a cable restraint is designed such that tension is totally reduced when it is properly used. When the audio cable go through the cable restraint, it could prevent sweat from going directly into the electronic board via the connector. This is another advantage of the cable restraint.

Installation of Lavalier / Headset microphones or instrument inputs

Depending on customer requirements, Lavalier / Headset microphone or instrument inputs could be connected to the transmitter via the audio input connector. User is free to choose the various input sources but is advised to take note that connector used must be compatible to each other. The pin configurations of mini XLR connector are as follow figure.

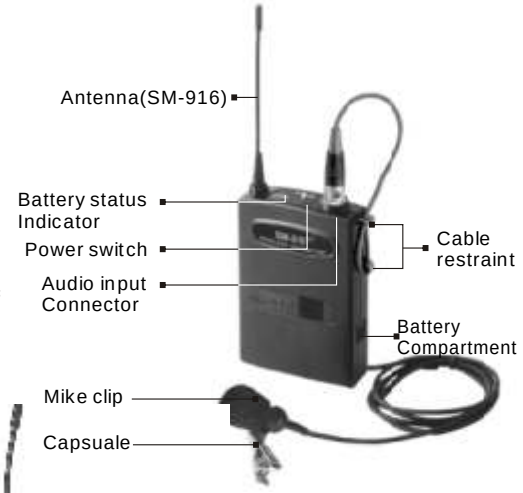
■ mini XLR connector



Beltpack Transmitter **SM-916(UHF) / SM-316(VHF)**

Battery installation

SM-916/SM-316 use a 9V battery. To insert the battery, first open the battery compartment cover by pressing the cover downward till the door flips open by itself (see below picture). When installing the battery, please beware of correct polarity. To put back the cover of the battery compartment, one has to press the cover in upward direction until it is locked.



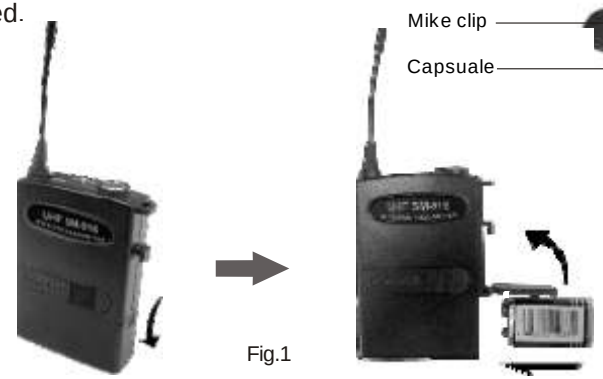
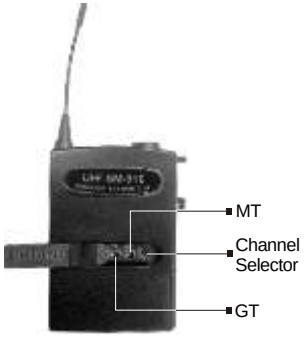


Fig.1

Channel selection and gain adjust

Channel selector and gain adjust are hidden in the designated cover of the front as illustrated. To make channel selection and gain adjust, please press the designated cover and flip it open as illustrated. Channel selection can be made by rotating the selector with a small screw driver.

Gain adjust for Lavalier and Headset microphones can be done by adjusting the MT switch, whereas GT switch is for the gain adjust of electric Guitar and other high- impedance line level inputs.



Making changes to various settings in SQ-5016

1.Making changes to Channel:
Use UP or DOWN button to go to the CHANNEL/ FREQUENCY page. The cursor will flash to allow changes to be made. Pressing UP or DOWN button will increase or decrease the channel number. The corresponding frequency will change accordingly. When a desired channel is selected, it will be automatically saved and stored in the memory.

2. Making changes to Battery selection:
Use UP or DOWN button to go to the Battery selection page.

Press UP or DOWN button to move the cursor to either NiMH (rechargeable battery) or AKLN (Alkaline battery) position.

When the desired battery has been selected, it will be automatically saved and stored in the memory.

Remark : "NiMH" must be selected when rechargeable battery is being used. Never select "AKLN" (Alkaline) when transmitter is intended for charging as Alkaline battery can not be charged ! Wrong selection of battery will cause battery sensing electronics to display wrong information and mislead charging status.

3. Making changes to Sensitivity Level:
Use UP or DOWN button to go to the SENS SET page.

Press UP or DOWN button to increase or decrease the Sensitivity Level of the transmitter. The MAX level is 4 and the MIN level is 1.

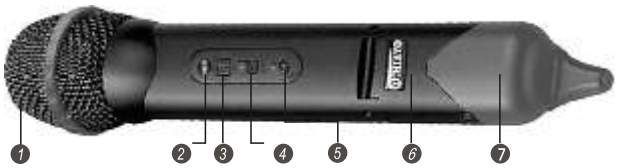
When a desired sensitivity level has been selected for your application, it will be automatically saved and stored in the Memory.

Remark : When selecting Sensitivity level, please keep in mind that Level 1 is for close proximity singing purposes whereas Level 4 is for use of transmitter on tripod mount for speech purposes. When Level 4 setting is used for close proximity singing, high SPL input will result in undesirable distortion in the output.

After performing setting changes, you could turn the protective cover 180° in either direction to block the buttons from being accidentally adjusted.

Handheld Transmitter **SQ-916(UHF) / SQ-316(VHF)**

Parts & functions



1. Capsule with metal grille
2. Battery indicator
3. Sensitivity switch
4. Power on/off switch
5. Battery cover
7. Color cap

Battery installation

SQ-916/SQ-316 use a 9V battery for power. To change or replace the battery, please remove the color cap first, then press the bottom of battery compartment to release the cover as shown below.

Sensitivity switch

This microphone has a sensitivity switch. For close mouth singing or normal speech, please put the switch to L (Low) position. For tripod-mount speech, please put the switch to N (Normal) position.

■ Low Sensitivity

■ Normal Sensitivity

Making changes to various settings in SM-5016

1.Making changes to CHANNEL / FREQUENCY:
Use UP or DOWN button to go to the CHANNEL /FREQUENCY page.

The cursor will flash to allow changes to be made. Pressing UP or DOWN button will increase or decrease the channel number. The corresponding frequency will change accordingly. When a desired channel(frequency) is being selected, it will be automatically saved and stored in the memory.

Remark : When changing transmitter frequencies, user should take care not to cause interference to other channels / users.

2.Making changes to Battery selection:
Use UP or DOWN button to go to the Battery selection page.

Press SET for about 2 seconds to activate the cursor. Press UP or DOWN button to move the cursor to either NiMH (rechargeable battery) or AKLN (Alkaline battery) position.

When the desired option has been selected, press SET for about 2 seconds to save and store the data in the memory.

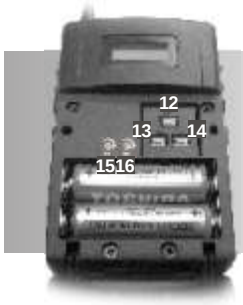
Remark : "NiMH" must be selected when rechargeable battery is being used. Never select "AKLN" (Alkaline) when transmitter is intended for charging as Alkaline battery can not be charged ! Wrong selection of battery will cause battery sensing electronics to display wrong information and mislead charging status.

3.Input Level Gain Control Adjustment
Low impedance (Lo-Z) " MT" & high impedance (Hi-Z) " GT" gain controls are situated inside the transmitter. Gain controls are adjustment ports that enable you to use microphones of differing output levels and Guitar or instruments with Hi-Z output. To adjust microphone (Lo-Z) input levels, turn the "MT" control and to adjust the Guitar or instrument (Hi-Z) input, adjust the "GT" gain control to set the transmitter's desired audio input level.

UHF Beltpack Transmitter **SM-5016**

Parts & Functions

1 Antenna
2 Battery weak / audio mute indicator
3 Audio mute switch
4 Mini-XLR connector
5 Power ON / OFF switch
6 LCD display
7 Charging port
8 Cover release button
9 Charging contacts
10 Lavalier microphone
11 Mic clip



12 SET
13 UP
14 DOWN
15 GT
16 MT

Battery installation

SM-5016 uses 2 pieces of " AA " size batteries (Alkaline battery is recommended). To install or remove the batteries, press the release buttons at the edges of the transmitter to open or close the cover as illustrated below.

Changing of capsule

This microphone has a modular design. To change or replace a capsule, Open the grill to pull out and plug in the capsule as shown in the following figure.

Operating instruction

1.Before operation, please check and make sure that transmitter & receiver are of matching frequency or frequency group.

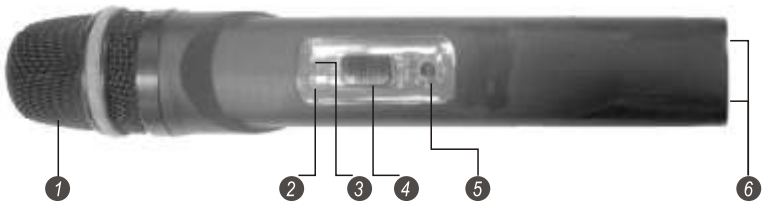
2.To switch on the microphone, put the switch to "ON" position. The green LED indicator will light onto indicate that battery is fresh. When RED LED lights on, it indicates that battery is weak, thus a replacement is necessary.

3.For best result, alkaline battery is recommended. Please remove the battery if the transmitter is not to be used for a longer period.

4.When necessary, mic capsule could be replaced by pulling out and plugging in the new one, either dynamic or condenser for SQ-916 / SQ-316.

Handheld Transmitter **SQ-816(UHF) / SQ-216(VHF)**

Parts & functions



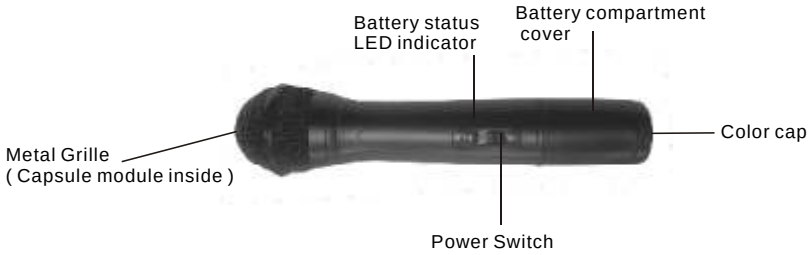
1. Capsule with metal grille
2. Battery normal indicator (Green)
3. Battery low indicator (Red)
4. Power on/off switch
5. Channel switch
6. Charging port

Battery installation

SQ-816/SQ-216 transmitter requires 3 pieces of " AA " size battery to operate. Please insert the batteries according to the correct polarity as indicated. To open the battery compartment, press and slide down the cover until it clicks and locks. Further sliding movement will remove the cover.

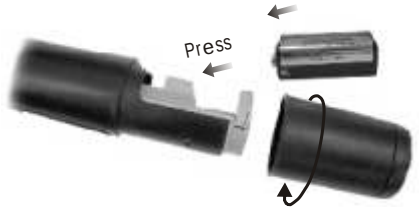
VHF Handheld Transmitter **Q-1002**

Parts and Functions



Battery Installation

Q-1002 uses 1 piece of 9V battery. To install new or replace the old battery, First unscrew the battery cap from the battery compartment, then insert the new battery according to its correct polarity as indicated. For longer operation hour, Alkaline battery is recommended!



- After putting the battery cover back to the housing , slide the switch to "ON" position as shown below.

- **As soon as the power is on, the battery-status indicator will give flash, indicating a normal operation. If there is no flash, it indicates either power supply is not available or battery is installed wrongly.**
- **After switching on, the Therefore signal indicator LED(s) of matching receiver will light up, indicating the microphone signal transmission is in normal operation.**
- **Switch off the power when the microphone is not in use, meanwhile, remove the battery out of microphone if it is not to be used for an extended period.**